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March 13, 2007

CERTIFIED MAIL

Mr. Patrick Epperson
Radioactive and Hazardous Waste Management
Environmental Protection Department
Lawrence Livermore National Laboratory
7000 East Avenue
Livermore, CA 94550

Dear Mr. Epperson:

On November 29, 2006 the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), conducted a Limited Enhanced Surveillance Inspection of Lawrence Livermore National Laboratory located in 7000 East Avenue, Livermore, CA 94550. The enclosed report describes the findings of this inspection.

Because no violations were discovered during the inspection, no written response to the letter is required. DTSC appreciates your efforts made to comply with the hazardous waste laws and regulations.

All pertinent information derived from the inspection, including documents, photographs, and sampling results, are included as attachments to the report, except copies of documents provided by your facility at the time of the inspection. In order to reduce copying and mailing costs, these have not been returned to you with the report; copies will be provided if you request them. This report will become a public document; you may request that any trade secret or facility security information be withheld from public disclosure. (See Health & Saf. Code, sec. 25173, attached.)

If you wish to assert the trade secret privilege after you have reviewed the report, please provide specific answers to each of the following questions for each item:

- To what extent is there knowledge of the information conveyed by the photograph/document outside of your business?
- To what extent is there knowledge of the information conveyed by the photograph/document, by employees and others in your business?

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- To what extent have measures been taken to guard the secrecy of the information?
- Is the information valuable to competitors? If so, why?
- Has there been substantial monetary expenditure in the development of the information?
- Could the information be easily and properly acquired or duplicated by others?

DTSC will review your response to these questions to determine if the information should be treated as trade secret and will notify you of its decision.

If you have any questions regarding this letter, or if you wish to meet with DTSC to discuss any questions or concerns you have with the inspection, the report, the violations, or the required corrective action, please call Mr. Brocales at (510)540-3953.

Sincerely,

Original signed by Patti Barni

Patti Barni

Unit Chief

Statewide Compliance Division

Enclosure

Certified Mail Number: 7004 2890 0000 7273 3923

INSPECTION REPORT

I. GENERAL INFORMATION

Facility Name: Lawrence Livermore National Laboratory

Facility Address: 7000 East Avenue
Livermore, CA 94550

Telephone Number: (925) 423-4760

ID Number: CA2 890 012 584

Facility Type: Permitted Units- Area 612, Storage and Treatment: Building 695, Storage and Treatment Building 693, Container Storage: Interim Status-Area 514, Storage and Treatment, Building 233, Container Storage (inactive- undergoing closure), Tiered Permitting-Resin Mixing Unit.

Type of Business: Research and Development Laboratory on: nuclear weapons, magnetic fusion, energy, lasers, biomedical and environmental sciences, and applied technology, and other nuclear applications.

Waste streams: Nearly all hazardous wastes, mixed wastes (RCRA hazardous waste with radioactive components); combined wastes (Non-RCRA hazardous waste with radioactive components)

Regulated Units: Permitted and Interim Status Facility; Permit effective November 19, 1999

Regulatory Status: Permitted storage, treatment, exempt transfer facility, and a registered Hazardous waste transporter

Type of Inspection: Enhanced Surveillance Inspection (ENS)

Inspected By: Essam Eissa, Hazardous Substances Scientist
Eric Brocales, Hazardous Substances Scientist

Date(s) of Inspection: November 29, 2006

II. CONSENT

Consent to conduct an inspection includes: inspecting hazardous waste handling areas, taking photographs, conducting sampling activities, and reviewing and copying documents.

Consent Given By: Patrick Epperson
Department Division Leader, RHWM
Time: 1045 hr

III. BACKGROUND

Lawrence Livermore National Laboratory (LLNL) is a national laboratory owned and operated by the United States Department of Energy (DOE). LLNL is jointly operated by the University of California Regents and DOE. LLNL operates a research and development facility to conduct research and development programs on nuclear weapons, magnetic fusion, energy lasers, biomedical and environmental sciences, and applied technology.

The research and development programs at LLNL generate hazardous, mixed and combined wastes, regulated under the Federal Resource Conservation and Recovery Act (RCRA) that also contain low level radioactive materials. Mixed wastes generated include wastewater that contains organic metals, spent caustic and acidic solutions, soils from clean-up activities, scrap metal, waste treatment sludge, and empty containers. Combined wastes are non-RCRA hazardous wastes that also contain low level radioactive materials. Combined wastes generated at the laboratory include waste oils, contained laboratory trash, and empty containers.

In February 1997, DTSC issued a Compliance Order to the United States Department of Energy (DOE) requiring DOE to comply with the Site Treatment Plan (STP) for the treatment of mixed waste at LLNL pursuant to RCRA as amended by the Federal Facility Compliance Act of 1992 (FFCA). The FFCA required DOE to prepare STP for developing treatment capacities and technologies to treat all the facility's mixed waste to meet LDR. The STP consists of the Compliance Volume and the Background Volume. The Compliance Volume provides overall schedules for achieving compliance with LDR storage and treatment requirements for mixed wastes based on milestones (milestones have both an event and a date component, and is a fixed, firm, and enforceable obligation of DOE). Background Volume contains progress reports and other information. DOE is required to carry out all activities in accordance with the schedules and requirements in accordance with the STP and the Compliance Order.

Combined waste, which is regulated only under state law, is regulated under the terms of the Memorandum of Understanding (MOU) between DTSC and DOE.

The MOU, signed on August 18, 1997, sets forth agreed upon terms for determining the future regulation of combined wastes at DOE facilities. DTSC and DOE agreed to complete a Memorandum of Agreement (MOA) for both agencies to discuss the requirements for future regulation of combined waste. Pending the finalization of an MOA, DTSC agreed to refrain from taking enforcement action against DOE with respect to the treatment, storage and disposal of combined wastes without a permit or authorization, provided the management of the combined waste streams is consistent with DOE.

LLNL is operating a hazardous waste and mixed waste storage and treatment facility under a Hazardous Waste Facility Permit (HWFP) issued to LLNL on November 19, 1999. The last modification on the permit was July 28, 2003. Modifications in 2001, 2002, 2003, and 2004 are listed in Appendices A and B of the Hazardous Waste Facility Permit (HWFP).

Prior to the issuance of the HWFP, LLNL was under interim status. The HWFP allowed LLNL to continue operating under Interim Status, Building 233 Container Storage Unit and specific units at Area 514 Treatment and Storage Area, until the completion of the construction and activation of the DWTF Complex and Building 280 Container Storage Unit.

On April 13, 2001, LLNL informed DTSC of its intent to submit a permit modification requesting to remove Building 280 Container Storage Unit from the permit. On January 9, 2004, LLNL submitted a class 2 modification request to relocate the currently permitted storage capacity and operation from Building 280 to Building 696 R and administratively close Building 280. The DWTF Complex commenced operation in September 2003.

Building 233 Container Storage Interim Status Unit is currently in the process of closure pursuant to LLNL's Phase I Work Plan submitted and approved by DTSC on April 26, 2004. The final Closure Plan for Area 514 was approved on April 30, 2004. Area 514 consisted of building and areas where hazardous wastes have been treated and stored. The treatment and storage areas were phased out of services as the new DWTF became active. Some of the treatment equipment at area 514 was relocated to DWTF, HWFP, Exhibit A, Transition Summary: Transfer of Existing Waste Treatment Units to the DWTF. The Transition Summary in the permit did not include the transfer of the Area 514 Waste Filtration Unit (Dorr-Oliver Unit) to the DWTF. LLNL has submitted a permit modification request to replace the Building 695 Wastewater Filtration Unit provided in the approved Operation Plan, with the Area 514 Dorr-Oliver unit.

Another building that also operated under interim status was Building 419. The Closure Plan for the building has not yet been approved by DTSC. Since the effective date of the HWFP, DTSC has conducted yearly inspections at LLNL. On January 26, 27 and 31, 2005, the Department conducted an Enhanced Surveillance Limited Inspection which was conducted in accordance with the

Settlement Agreement between Tri-Valley Cares v. Department of Toxic Substances Control, Case Number: 821072-4. No violations were observed.

During the March 2000, May 2002 and March 2003 full compliance evaluation inspections, class I violations were discovered which included: the storage of mixed wastes containing trichloroethylene, toluene, and spent organic solid trash for more than one year; storage of hazardous waste drums containing organic liquid trimsol and water; receipt, treatment and storage of liquid shredder waste without following the Waste Analysis Plan; and failure to provide employees with the required training courses for handling hazardous wastes. The class I violations were settled in a Consent Order, HWCA 20020090, dated February 5, 2004. The 2001 inspection found Class II and minor violations on: container labeling and inaccurate operating record. A copy of the Consent Order and inspection reports from 2001 to 2003 are available on the DTSC website at <http://www.dtsc.ca.gov/hazardouswaste/llnl>.

This inspection, like the January 26, 2005 inspection was conducted in accordance with paragraph 6 (b) the Settlement Agreement and Stipulation for Entry Order Retaining Jurisdiction to Enforce Agreement; (Proposed) Order, Case No: 8210724, filed on June 26, 2001, stemming from a law suit filed by Tri-Valley Communities Against A Radioactive Environment, Western States Legal Foundation, and Physicians for Social Responsibility, SF Bay Area Chapter, against DTSC and LLNL regarding California Environmental Quality Act compliance.

On May 27 and 28, June 1 – 3, 2004, a Compliance Evaluation Inspection was conducted. Five Class I Violations and three Class II Violations were cited. The following Class I Violations were cited: treatment of hazardous wastes in an unauthorized unit, commingling incompatible wastes in the same container, certifying prohibited wastes for land disposal without meeting treatment standards, failure to comply with the waste analysis plan, and storage for greater than one year. The following Class II violations were cited: failure to comply with labeling requirements, failure to follow waste analysis plan, and failure to accurately record observations in an inspection log.

On October 31, 2005 and November 1, 2005 an Enhanced Surveillance Limited Inspection was conducted at LLNL. As a result of that inspection, a Class II Violation was cited for failing to provide accurate records of hazardous wastes received, and the date(s) of its transfer and storage.

LLNL responded to the violation in a letter dated July 17, 2006. LLNL requested to have the violation reclassified to a Minor Violation. However, after further review by DTSC staff, the violation was removed because LLNL is not required to provide tracking for wastes generated and stored in the WAA/SAA. DTSC submitted a letter on November 21, 2006 to LLNL regarding the decision to drop the violation.

On September 27, 28, October 2, 6, and 11, 2006 the DTSC conducted a compliance evaluation inspection at LLNL. On October 18, a Class I Violation was issued in a Summary of Violations issued to LLNL on October 18, 2006. The inspection report is pending.

IV. Narrative of Observations

On November 29, 2006, Essam Eissa, David Matsumoto and I (DTSC employees) arrived at the West Gate Badge Office. We identified ourselves to the receptionist, and stated the purpose of our visit which was to conduct an unannounced inspection of the facility. After obtaining all the necessary clearances, Stan Terusaki, LLNL employee, arrived to escort us in to the facility. We followed Mr. Terusaki to the Building 695 conference room for the pre-inspection meeting.

Other LLNL representatives arrived at the conference room to attend the pre-inspection meeting. An attendance sheet was passed around for all the attendees to sign (see attachment 1). After a brief introduction, I informed the attendees of the purpose of our visit. I stated that in addition to their yearly Comprehensive Evaluation Inspection (CEI) of the permitted hazardous waste management facilities, the DTSC performs a second inspection (Enhanced Surveillance/Limited Inspection) during each of the three years that immediately followed the start date of operations at Building 695 Decontamination and Waste Treatment Facility (B695) in accordance with the Settlement Agreement between Tri-Valley Cares v. DTSC, Case Number: 821072-4.

I also added that we would limit our inspection only to B695. However, I explained that at any time we could expand the scope of our inspection. I stated that the inspection would begin by a walk through of B695, and that a close out meeting would be scheduled at the end of the day. I then asked for consent to conduct the inspection. I stated that consent to the inspection may include, inspecting hazardous waste handling areas, taking photographs, conducting sampling activities, and reviewing and copying documents. Consent was granted by Mr. Patrick Epperson, LLNL Department Division Leader.

After receiving consent, I introduced Mr. Matsumoto (DTSC Industrial Hygienist) to the attendants, and stated that Mr. Matsumoto would be monitoring the storage areas with a Ludlum 19, because DTSC has an exposure limit of 2mR per hour.

I stated to the attendants that we would start the inspection with a walk-through of Building 695. In an effort to save time, I requested documents from their files needed during our records review portion of the inspection. The documents requested were as follows:

- Emergency notification requirements
- ES&H Worksheet requirements
- Waste in hold status requirements
- Unacceptable waste requirements
- Single Container Inventory Limits requirements
- Verification failure requirements
- Entire Inventory for DWTF

We then walked over to Building 695 (B695). At the lobby of B695, we all signed the guest log. John Bowers, of LLNL, provided us with a Safety Orientation prior to entering B695. After the orientation briefing, we entered the Liquid Waste Processing Area

Liquid Waste Processing (LWP) Area, Room 1028

The LWP houses nine 5000 gallon cylindrical tanks with conical bottoms. At this time, Mr. Eissa and I requested the inspection logs for the tanks (see attachment 2). The control panel which indicates the tank levels showed that THL-116 was not empty and a treatment record was requested (see Discussions With the Operator). It was determined after visual inspection that the tanks appeared to be in good condition, and the secondary containment was dry and free of liquid. No violations were observed at this time.

This area also houses the Dorr-Oliver Unit and the Cold Vapor Evaporator Unit. Both of these units are used for treating hazardous wastes. I requested to see the treatment logs for both of the units. Mr. Bower's stated that he would have them available for us when we return to the conference room. No violations were observed at this time.

I also observed hazardous waste containers stored in this area. Upon visual inspection, the drums appeared to be closed and in good condition, with no signs of releases to the environment. The containers were also labeled. I requested a photograph of two drums (Q00230834-W307418 and Q00230837-W307421) staged in Room 1028 (see attachment 3). I also requested a copy of the inventory for all hazardous waste containers stored in Room 1028 (see attachment 4).

Building 695 (DWTF) Airlock, Room 1027

LLNL informed us that this area was currently processing materials and that extra protective measures would be implemented if we were to enter the area. I advised them that it would not be necessary to enter these areas due to the limited scope of the inspection.

Airlock (Room 1037 and 1036)

LLNL informed us that this area was currently processing materials and that extra protective measures would be implemented if we were to enter the area. I advised them that it would not be necessary to enter these areas due to the limited scope of the inspection.

Reactive Waste Processing Area (Room 1023)

LLNL informed us that this area was currently processing materials and that extra protective measures would be implemented if we were to enter the area. I advised them that it would not be necessary to enter these areas due to the limited scope of the inspection.

Reactive Waste Storage (Rooms 1019-1022)

LLNL informed us that this area was currently processing materials and that extra protective measures would be implemented if we were to enter the area. I advised them that it would not be necessary to enter these areas due to the limited scope of the inspection.

Due to the activities being performed in the other rooms within B695, we returned to the B695 Conference Room.

V. Discussion with Operator

B695 Conference Room, November 29, 2006

Back at the conference room, we reviewed records that were already available. Mr. Bowers informed us that after further review, THL-116 was in fact empty, contrary to what the instrument panel had displayed. Mr. Bower's stated that the sensor inside the tank was sensing the mechanical stirrer inside the tank. Mr. Bower's stated that the stirrer was moved away from the sensing area of the sensor, which corrected the issue.

I asked Mr. Bower's if I could see today's (November 29, 2006) inspection log for THL-116 (see attachment 2). I observed that the log did note that THL-116 was empty at the time of inspection.

Mr. Eissa and I then asked Mr. Bower's to provide an explanation via letter to discuss the issue regarding the sensor for THL-116, and steps taken to prevent incorrect readings. This information was submitted to DTSC by e-mail on December 5, 2006 (see attachment 5). No violations were observed at this time.

On November 29, 2006, Mr. Eissa was reviewing the Inspection Logs for the tank farm in Room 1028 of B695. Mr. Eissa observed THL-109 and THL-112

were not empty on November 15, 2006. Mr. Eissa requested the operating record. Due to time, we requested that Mr. Bower's submit his explanation and records via e-mail.

At this time, I stated that I was ready to hold the close-out meeting for the inspection. Others who wanted to attend the close-out meeting arrived and an attendance sheet was passed around (see attachment 13). I thanked everyone who assisted us with the inspection, and briefed them on my observations. I requested a contact person, should there be any additional information I may need during my review of the records. Mr. Yimbo stated that he would be able to assist me should I need further information. In addition, LLNL personnel and I agreed to have the documents, photographs, and explanations I requested be sent to my e-mail (ebrocale@dtsc.ca.gov).

I then issued the Summary of Observations (SOO), and stated that issuing the SOO did not preclude DTSC from citing violations after further investigation. The SOO was signed by Mr. Epperson on November 29, 2006 (see attachment 14).

December 13, 2006

On December 13, 2006, LLNL submitted a response regarding tanks THL-109 and THL-112 observed on November 29, 2006 (see attachment 6). The response describes the fate of water used to flush empty tanks and lines, and stored in THL-112 and THL-109 on November 15, 2006. No violations were observed at this time.

VI. Documents Reviewed for Compliance with Settlement Agreement

Emergency Notification

On November 29, 2006 I reviewed LLNL's Notification (Part IV.13) procedures outlined in their Hazardous Waste Facility Permit (Permit No. 99-NC-006) (see attachment 7). I asked Mr. Yimbo if there had been any incidents requiring implementation of the Emergency Notification Procedure's such as fire, explosion, or unplanned or non-sudden releases of any material to the environment. LLNL responded in an e-mail attachment that no incidents have occurred since the last inspection in October/November 2005 (see attachment 8). No violations were observed at this time.

ES & H Worksheet Requirements (Compliance with Emergency Response Planning Guidance (ERPG))

On November 29, 2006 I reviewed LLNL's Compliance with ERPG's (Part IV.14) outlined in their Hazardous Waste Permit. LLNL is required to complete an ES&H Integrated Work Sheet (IWS) as described in Part VI.2.1.6 of the Part B Application, and must be reviewed.

LLNL submitted an IWS for Building 695 (IWS 2563.09 reviewed and approved on 09/19/2006) which outlined operations at B 695 including treatment, waste handling activities, lab operations, storage, bulking, inspection of equipment, maintenance, sampling, material movement and waste container rinsing (see attachment 9). No violations were observed at this time.

Waste Analysis Plan: Wastes Sampling Exemption Requirements

LLNL wastes not covered under an existing waste profile are sampled and analyzed to characterize it and confirm the generator-supplied data. Waste that cannot be sampled because of its physical form or for safety reasons or that is unused commercial chemical product qualifies for sampling exemptions and its characterization is confirmed through other means.

Mr. Yimbo stated in an e-mail response that an example of a waste meeting the exemption would be "aerosol cans" of spray paint. The cans have labels that identify its contents, and are verifiable with onsite MSDS's. After a visual inspection and confirmation, the containers can be managed without sampling analysis (see attachment 10).

Waste In "Hold" Status Requirements

LLNL waste(s) under special circumstances may be brought into a permitted Radioactive and Hazardous Waste Management (RHWM) storage facility on hold. To issue a "hold" status, personnel must:

- Conduct an initial waste evaluation and, based on RHWM's knowledge of the waste-generating process, determine that sufficient supporting data exist to ensure the waste's proper packaging and transport.
- Determine that the Waste Disposal Requisition (WDR) identifies the major matrix characteristics and contains adequate information to allow safe storage.
- Determine that all permit requirements are satisfied.

If these specific conditions are met, RHWM approves transfer of the waste to a permitted RHWM facility for storage only under hold status, and monitors it until it is released.

On December 5, 2006 LLNL submitted the B695 Liquid Waste Processing Area Inventory (see attachment 4). No wastes were on hold at this time. No violations were observed at this time.

Unacceptable Waste Requirements

Prior to a waste being accepted into a RHW facility, the waste must meet the acceptance criteria of the accepting RHW facility. LLNL's Waste Analysis Plan (WAP) has defined what wastes would qualify as an unacceptable waste in Section 4.3.3.3 *Unacceptable Wastes*.

LLNL submitted an example of a waste determined by the RHW facility to be unacceptable for transfer (see attachment 11). The waste (lead oxide) represented in WDR #W303480 was determined by the RHW to be unacceptable because the waste did not meet the Single Container Inventory Limit (SCIL). The shipment was to be shipped directly from the Waste Accumulation Area (WAA) to an off-site Treatment, Storage, and Disposal Facility (TSDF). No violations were observed at this time.

Single Container Inventory Limit (SCILs)

In a response e-mail by LLNL sent on October 4, 2006, an example of a SCIL being exceeded for lead oxide, in WDR #W309074 was submitted. The WDR and supporting documentation shows that LLNL determined the container did not meet the SCIL and was not accepted for transfer to the RHW on September 25, 2006(see attachment 11). WDR #W309074 was then approved for transfer to the WAA on September 25, 2006. No violations were observed at this time.

Verification Failure of Internally Profiled Wastes

In a letter from LLNL dated February 28, 2007, LLNL submitted documentation for Spent Electroless Copper Plating solution (Profile 153-1). Based on sampling and analysis performed on September 11, 2006, LLNL stated that a Waste Analysis Plan (WAP) failure was identified through the profile verification process and subsequently a Nonconformance and Corrective Action Report (NCAR 03-13) was issued and closed in September 16, 2003.

The NCAR (03-13) identified the waste (Profile 153-1), provided a description of the nonconformance (a non-detect (ND) of 4 metals originally listed as detectable in the regulated range), and the actions taken to correct the nonconformance (to write a RHW Change Request, Notify Profile Coordinators, and Remove Profile Designation for this waste stream) (see attachment 12). No violations were observed at this time.

VII. Violations

Summary of Observations Attached? Yes ☒ (see attachment 14)

VIII. SAMPLING ACTIVITIES

Not applicable.

IX. ATTACHMENTS

1. Attendance Sheet
2. Daily Inspection Log for Building 695
3. Photographs
4. 695 Liquid Waste Processing Area Inventory
5. E-mail explanation regarding THL-116
6. E-mail explanation regarding THL-109 and THL-112
7. Hazardous Waste Facility Permit Number: 99-NC-006
8. E-mail response stating from LLNL stating no incidents have occurred since the last inspection
9. Integrated Work Sheet 2563.09
10. E-mail regarding Waste Sampling Exemption
11. RHWL Waste Disposal Requisition Certification W309074
12. Response from LLNL dated February 28, 2007 regarding Internal Profiles
13. Close-Out Meeting Attendance Sheet
14. Summary of Observations

Original signed by Eric Brocales
Eric Brocales
Hazardous Substances Scientist

March 13, 2007
Date